



# Gendered Design in STEAM Bulletin



ISSUE FIVE | November, 2021

"Thank you to everyone who helped in producing Issue Five of the GDS Bulletin. Thanks to our GDS research projects for their fieldwork update - it is fantastic reading about, and seeing some visuals of your activities so far, despite the continued pandemic challenges. Special thanks to Dominique Marshall and Chiara Del Gaudio for their content pieces. Thank you to Maya Chopra, Ona Bantjes-Rafols and Amie Wright for sourcing information from the field."

*Kerry Grace, GDS Program Coordinator and Editor of the GDS Bulletin*

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# MAIN FEATURE

## LabTwo | Session Two - Prototyping

We first looked at prototyping with Bjarki Hallgrímsson in our [GDS Bulletin Issue 2](#), who discussed why risk-taking and prototyping are important in design and STEAM, reminding us that *“Developing something that works in a technical sense, but has no appeal or does not work for cultural or other human reasons, is ultimately a failure”*.

Our LabTwo | Session Two Prototyping workshop in October, focused on bringing together the Stream 2 awarded projects – those who are developing a prototype as part of the research award – to explore their experiences of the prototyping aspect of their research project and provide an opportunity to learn from each other and discover what prototyping means in different contexts and research fields.

### Introduction from Bjarki Hallgrímsson

“If we go back 20 years and we look at what is a prototype, it was mainly seen as a precursor to a final product or service. It was usually talked about as being something physical, for example, the prototype of a new car. The prototype was usually seen as the first of its kind, but very close to the final product. It was an opportunity to do verification testing and fine-tune a design. This makes prototypes very important because they allow us to safely evaluate our designs before they are released to the public. A picture tells a thousand words, but a prototype can tell a thousand stories.

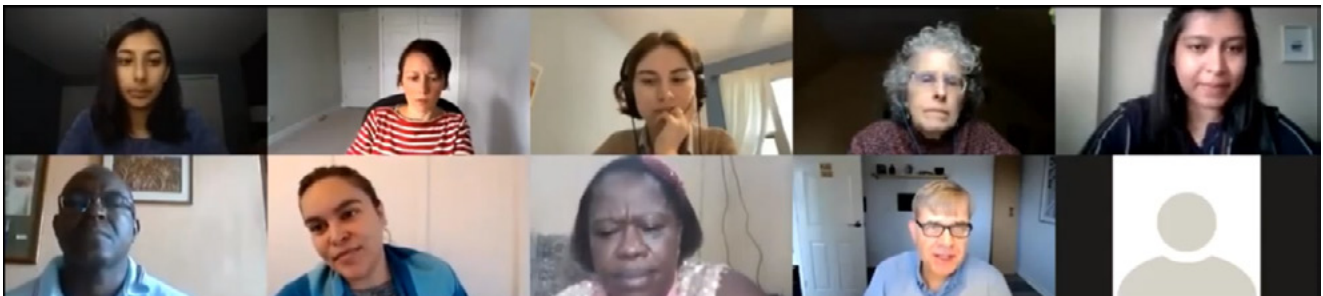
In the last 10 or 15 years, our understanding has grown immensely in terms of what a prototype is and how it can be used. We now acknowledge that prototyping is much more iterative and it is a process that involves many smaller activities and efforts of testing and trying things out to inform ourselves as scientists, as engineers, and as designers.

In that sense, we are increasingly acknowledging a lot of the important, and sometimes seemingly simple and sometimes crude prototypes that are created behind the scenes. To learn anything useful for our understanding of a large number of issues including technological, as well as human-centred issues and aspects.

All the projects that are part of the GDS Program involve community partners and those types of projects are inherently complex at the human level. Prototyping provides an important method for participating with your communities through a variety of interventions that are often aided by prototypes.”

*“A picture tells a thousand words, but a prototype can tell a thousand stories.”*

- Bjarki Hallgrímsson



Some of the participants from the workshop hosted on Friday 22 October.

## Aim of the workshop

The goal of the workshop was to evolve our notion of what prototypes are and how they can be used. We wanted to explore with the projects how prototypes of process and activity can be explained as an iterative activity of learning that also involves participants in some way. This could be the researchers themselves or their team, but the activity often uncovers problems as opposed to verifying solutions.

Some of the themes explored included:

- The definition of prototyping within a project – physical vs. non-physical outputs.
- Prototyping as a verb, versus a noun. How is it being employed as a research method?
  - Is the prototyping being used to gain insight?
  - Is the prototyping being used iteratively?
  - Is the prototyping being used to verify?
- Technology vs. Human-Centered research objectives
  - How is the prototyping approaching the research through a gendered lens?
  - How is the community involved?
  - What are participant involvements and why?
  - What are the technical challenges?
  - How does prototyping help relate technical challenges to human-centered challenges?
- Participatory, including questions related to an agency – who decided who gets to be involved and how?
- Managing risk, trusting the process and transparency.
- Where does the prototyping end?
- How does it help us evolve past academia and involve the community?

*"A redefinition of prototyping to include other than physical prototypes was highly relevant both as an innovative approach but also to integrate Gender issues in the design process."*

- Khalil Elahee, ID71

## Activities of the workshop

The workshop ran on two days on October 20 and 22, 2021, to ensure that all projects could attend and there was time for their work to be presented. A total of 11 project teams signed-up to take part. The session was planned and presented by Bjarki Hallgrímsson, one of the GDS Pls, with collaboration from Regional Expert for Africa, Emmanuel Mutungi.

Prototype description:

- What is the description of the prototype?
- How will the prototype be implemented?
- Is the prototype physical, digital, other? Describe.

Purpose and objectives of the prototype:

- Why is a prototype needed?
- What was the prototype's intended purpose?
- What does the prototype aim to achieve?
- What are the objectives?

Gendered lens:

- What are the gendered considerations in regards to the prototype?
- How does the prototype address gender implications?

**First activity was to produce a summary on the projects' prototype(s) background and consider these question for each prototype activity identified.**

Ahead of the workshop, a Miro board template was created to be a focus of collaborative thinking during the workshop session, with some information being prepared ahead of time. The GDS Research Assistants (RAs) worked hard leading up to the workshop to complete two main activities; the first to provide an overview of the project's prototyping activities, and the second, to produce a timeline of the prototyping activities.

To complete these activities, the GDS RAs reviewed all the information previously provided by the projects – the project proposal, the two progress reports and information from the GDS Bulletin – to identify prototype activities, their purpose and objectives, and anything that had a gendered lens. The RAs considered the questions listed in Box 1 during this exercise and added their findings to the Miro board. The second exercise focused on producing a timeline of the identified prototyping activities, which was then further developed during the workshop (Box 2). The aim was to use many visuals, photos, and graphics, to describe the prototyping activities on the timeline.

2

- Description of the prototyping activity.
- When did the activity take place?
- What did it do?
- Who did it involve?
- What were some of the challenges or limitations?
- What were some of the key learnings or insights from the process?
- How did the next iteration change?

Second activity was to create a timeline of all the prototyping activities. Example below.

The workshop

At the workshop, after an introduction from Bjarki, the RAs lead a short presentation on their findings and the information they had compiled onto the Miro board. After the presentations, the project teams split into their breakout room together with the RA and/or one of the core team members. There, the information gathered was reviewed, discussed and updated.

The initial activities mined and organized available information onto the Miro board template as interpreted by the RA. Therefore, some information may have been missing, or perhaps was wrongly interpreted or misunderstood by us as a team. But this was in fact, our prototype that was then iterated with the projects during the workshop. The Miro boards are a living document for the projects to evolve as they progress.

From the presentations and discussion sessions, we saw a variety of different prototyping activities; some very obvious and physical and others not so much such as the development of a survey. The latter provides for some interesting discussions. On the one hand, we could argue that surveys and questionnaires are prototyping activities if it is the survey itself that is being developed in the process. However, if it is being used as a survey instrument to gather information, in this sense the survey is more a data collection tool as a means to gather views from the participants.

*"I appreciate the highlights on technical challenges and community involvement which has helped us in planning, designing and driving the innovation adoption process."*  
 - Uduakobong Aniebiat Okon, ID47

There were examples of prototypes from the projects that lean towards a more technical side, such as body scanning and developing prostheses. We saw a solar fish dryer that is going through iterations in terms of the fuel source used. We also saw a generator as another example of a physical technical prototype. In another project, the prototyping involved computer modelling.

The other aspect of prototyping that we observed in the projects was more human-centred. These may be described more as interventions, where the activity is involving the community directly to try things out and for the researchers to learn and better understand their research challenge.



Example from project ID88 of the Miro board template used to create the timeline of prototyping activities.

Where the prototyping activity is very technical, it is encouraged to consider how to involve the community. Ultimately, how it works technologically also has to work in terms of other complexities that have to do with human nature.

### Closing statement from Emmanuel Mutungi

“ Prototyping is a transitional process that will move you from one stage to another stage in your project. One of the most important attributes of prototyping is to implement enhanced communication. It is not just about the image, but how best you can communicate what you are doing with the users, the community and even the producers. If that is not well perceived or understood, then the end product will not be used. Having the community and end-users engage with the prototype, in the environment where it will be used, can instantly show if modifications are needed and what these may need to be.

*"I got to learn that prototyping goes beyond construction but that it also includes physical interaction with people"*

- Ese Esther Oriarewo, ID65

This workshop shows us, from when we started in 2019 to where we are now that we have made great strides towards realizing our program goals. Every person who shared and contributed to the Miro boards during the session displayed a new innovation and a contribution to knowledge. It is this knowledge that people have contributed that will make their communities be a better place. The projects will be a testimony where the researchers, during the project life span, introduced an innovation that helped in moving people from one place to another better place. To me, this is prosperity and a time for us to make a contribution. Thank you all for attending.”

## Research Assistants and project presentations

### Wednesday 20 October

Maya Chopra:

ID57 - Developing a hybrid fish dryer to improve processing for small-scale female processors in Nigeria

Victoria Asi:

ID65 - Constructing an eco-friendly generator for low-income female artisans in Nigeria

ID71 - Developing small wind turbines with local women for domestic use in Mauritius

Dina Al Rubaye:

ID79 - Modernizing the batik industry to improve income for women in Tanzania

Alicia Gal:

IDA - 3D-printed prostheses to support low-income female survivors of domestic violence, accidents or cancer treatment in Brazil

### Friday 22 October

Rezwana Afrose:

ID33 - Improving access to financial services for women in Ethiopia

ID38 - Designing support services for women experiencing workplace harassment in Pakistan

Andrea McIntosh:

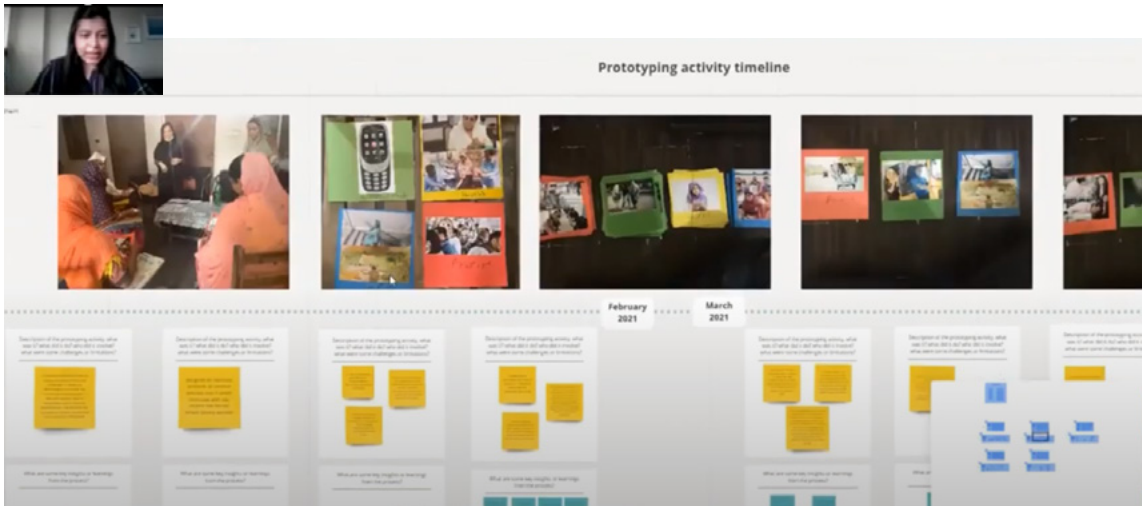
ID47 - Improving the design of upland fish drying technology for female fish vendors in Nigeria

ID88 - Developing new construction techniques based on the work of women in Brazil

Ona Bantjes-Rafols:

ID80 - Reimagining urban territories for women's autonomy in Colombia

*The following page has a few examples of the RA timeline presentations from the workshop.*

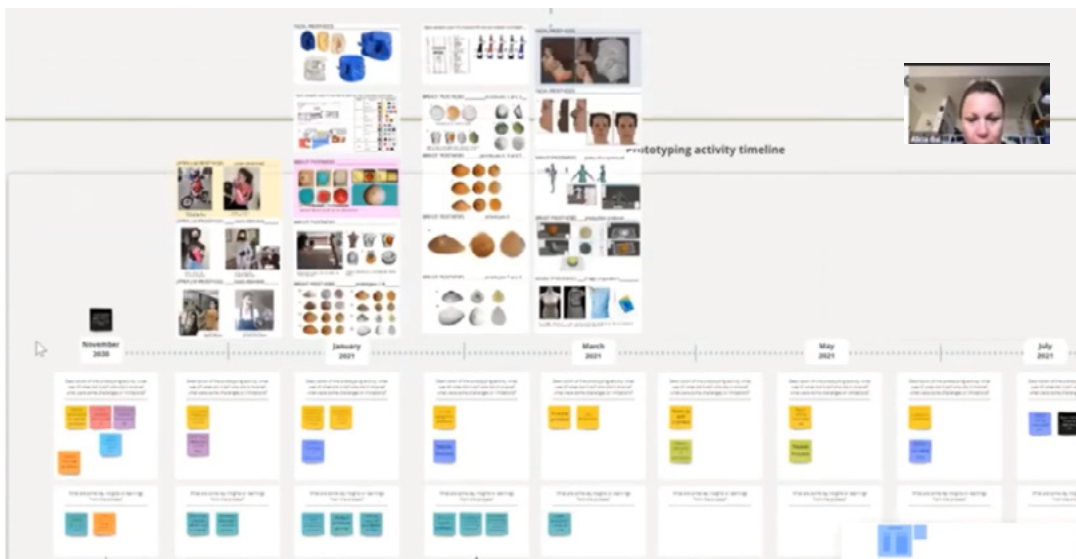


Rezwana Afrose presenting some of the Miro board timeline activity for project ID38.

*A big thank you to Maya and Ona who organized the RAs and the activities on the Miro boards, and of course the RAs in preparing the materials that supported the informative team discussions.*



Ona Bantjes-Rafols presenting some of the Miro board timeline activity for project ID80.



Alicia Gal presenting some of the Miro board timeline for project IDA.



# OPEN LEARNING

Here is a selection of readings and resources that you may find informative and interesting.

- Simonsen, J., & Robertson, T. (Eds.) (2013a). [Routledge International Handbook of Participatory Design](#). Routledge.

The Handbook brings together a multidisciplinary and international group of highly recognized and experienced experts to present an authoritative overview of the field and its history and discuss contributions and challenges of the pivotal issues in participatory design, including heritage, ethics, ethnography, methods, tools and techniques and community involvement.

The recording of a workshop and presentation on '[Gendered design and domestic hybrid renewable energy systems](#)' conducted by the research project team ID71 from the University of Mauritius, lead by PI Dr. Khalil Elahee.

- Rogers, Y., Sharp, H., & Preece, J. (2011). [Chapter 11: Design, Prototyping, and Construction](#), in [Interaction Design - Beyond Human Computer Interaction](#). 3rd ed. (online) or 4 th ed. (print). John Wiley & Sons, West Sussex.

Chapter 11 explores different types of prototyping activities, explains the use of scenarios and prototypes in design and aims to provide the knowledge to enable you to produce simple prototypes from the models developed during the requirements activity, and to produce a conceptual model for a product and justify your choices.

The textbook overall offers a cross-disciplinary, practical and process-oriented introduction to the field, showing what principles ought to apply to interaction design and crucially how they can be applied.

- Hallgrímsson, B. (2019) [Prototyping and Modelmaking for Product Design](#): Second edition. Lawrence King Publishers

The book illustrates how prototypes are used to help designers understand problems better, explore more imaginative solutions, investigate human interaction more fully and test functionality so as to de-risk the design process.

- Wensveen, S.A.G., & Matthews, B. (2014). [Prototypes and prototyping in design research](#), in Rodgers P.A. & Yee, J.(eds.) [The Routledge Companion to Design Research](#). (14th ed., pg 262-276).

This chapter focuses on the roles of prototypes as vehicles for research about, for and through design. The authors focus on prototyping within research processes that necessarily involve design activities, which they refer to as constructive design research.

- Marshall, D. (2021). Conclusion: Breaking historiographic Barriers, in Campbell-Miller. J., Donaghy, G. & Barker, S. (Eds.), [Breaking Barriers, Shaping Worlds: Canadian Women and the Search for Global Order](#). UBC Press

This book brings together a range of contributors in a comprehensive exploration of the role of women in 20th-Century Canadian International Affairs. It examines the lives and careers of women who have made an impact.

If there is a particular journal, article, book or chapter that you are interested in, but you are unable to access this through your local library, please contact the [Program Coordinator](#).

*If you would like to submit a suggested reading, event, discussion or video, please [complete this form](#).*

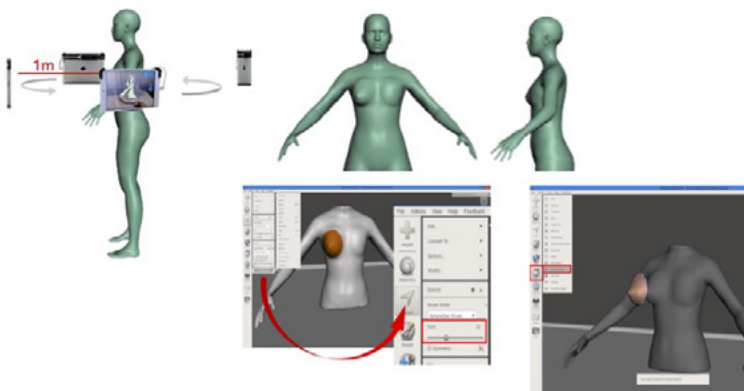
# INSIGHTS FROM THE FIELD

We hear from nine project teams from across Asia, Africa and Latin America on what they have been doing in the field for their research project and how they continue to adapt their methods due to COVID-19

IDA

3D-printed prostheses to support low-income female survivors of domestic violence, accidents or cancer treatment in Brazil | Federal University of São Paulo (UNIFESP)

*The team of IDA have been developing a framework to evaluate designs for 3D printing:* We have been using a Design Science Research approach, which incorporates theory, artefact development, creativity, and innovation with the objective of solving a practical problem. We are using this approach to evaluate the impact of 3D printing technology and gendered design prostheses to promote social inclusion. This involves the development of a Framework for Evaluation in Design Science (FEDS) that considers why, when, how and what to evaluate, based on our findings and the works of researchers like Vaishnavi & Kuechler (2004) and Hevner et al (2004). Part of our approach will involve conducting semi-structured interviews and questionnaires with participants in the project, to measure the more subjective aspects of their relationship with the prostheses. We want to qualitatively analyze the autonomy of women in being able to choose between using and not using prostheses, in order to understand their representations about their own bodies, self-esteem and identity.



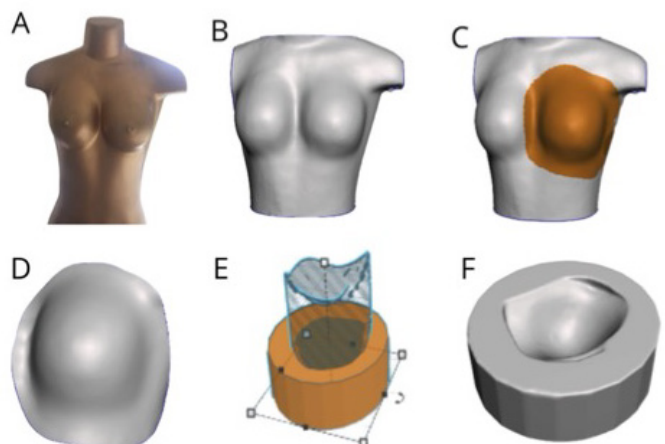
Above: Production protocol scanning for breast prostheses.

Right: Process of mold production of a personalized external breast implant.



*They have been prototyping different kinds of prostheses and collecting data from participants with some important findings:* A master's student on our team has advanced knowledge on 3D printing breast prostheses for cancer survivors. The use of 3D printing makes these prostheses more widely accessible. As a process, it is less expensive and does not require the presence of the user as compared to more conventional processes, while still producing high quality prostheses. Another advantage of using 3D printing is that from a single 3D digital model, it is possible to produce as many prostheses as needed.

We have also developed an upper-arm limb prosthesis that takes into account the comfort of women both emotionally and physically, rather than only considering utility. The most widely-used prosthesis model of this type has a hand size that is disproportionate to most hand sizes among women, and has no aesthetic details such as nails. We designed a transradial mechanical prosthesis (triggered by the elbow movement), with a more realistic, aesthetic hand for a young woman and carried out several tests to check that it was comfortable for our participant.





Upper limb prostheses cases (left to right): Marcia, 42yrs; Leticia, 15yrs; Ana, 26yrs; Isabeli, 15yrs.

We have a psychologist and an occupational therapist on our team who help with the rehabilitation process with participants, and in their evaluations. The user of this prosthesis reported that it was very different than other prostheses she had used. She had a good body identification with the developed prosthesis, felt more comfortable, and was surprised at how functional it was and similar to her real hand.

We are also prototyping a mechanical prosthesis of an upper limb actuated by an adjustable force tensioner with 3D printing. We have young girls participating in this prototyping development, and we are investigating ways to design these prosthetics that do not just take into account physical comfort but also their aesthetic desires, which includes things like bright colours and children's characters.

*The scope of the research expanded to include the development of a prototype to support women during birth:* We have recently added an investigation to our research study into designing devices that can help eliminate unnecessary cutting of the perineum region for the vaginal delivery of babies. The lack of a practical, safe, and comfortable device to measure the diameter of the perineum does not allow health professionals to assess muscle distension and consequently prevent episiotomy (the cut in the perineum) during normal birth. In order to answer this need, we are developing a prototype that consists of a tip with a silicone balloon, a hand pump and a digital reader to measure the internal pressure and

diameter of the balloon. The initial tests have been very successful, and once the prototype has been perfected and validated to measure the perineum, it can be evaluated with pregnant volunteers in the next phases of the research.

*Their next steps include sharing their work and testing the prostheses further:* Clinical trials will be organized for the breast prostheses, and the upper limb prostheses are being modified to better address gender design issues. These will then need further testing. We will develop a protocol for the production of nose and ear prostheses, and we are planning clinical trials for these as well.

We wish to involve more women in the process and help by bringing more prostheses to those who need them, however the pandemic restrictions complicate this aspect of the project. Travelling is not recommended, and women who need breast implants are immunocompromised and therefore a high-risk group, which limits their involvement.

We are applying to several conferences, and we have a chapter and several articles planned. In the coming months, we will be organizing events with group participants and outsiders to discuss various issues related to the project. These events will be remote and open to everyone.

Dr. Maria Elizete Kunkel (PI)  
 Professor Luciana Ferreira and  
 Professor Felipe Moura (UEL) (Co-PIs)

**ID47** Improving the design of upland fish drying technology for female fish vendors in Nigeria | University of Uyo



*The team have gathered key contributions from women farmers, processors, and vendors:* We have mobilized registered women fish farmers, processors, and vendors to gather their contributions for the fish drying innovation-built environment. Directors of fisheries in the state assisted in the mobilization of women. We have been able to conduct interviews and focus group discussions with the registered women fish farmers, processors, and marketers in the three senatorial districts in the Akwa Ibom State and gather design contributions from grassroots women. The women were very happy to discuss the historical antecedent and gaps, and provide suggestions to improve the proposed fish drying facility within a gendered built environment for women.



A participant from the Nigerian women fish processors and vendors speaks at the workshop.

*The team has developed a strong network with a gendered focus:* The interdisciplinary approach of the project has led to knowledge exposure in diverse fields such as architecture, history, engineering agriculture, and science and technology. As well, we are working with partner organizations, the Government of Akwa Ibom State, consulting firms, community leaders, and trade unions, all to support the project not only administratively, but also morally, intellectually, and technically. The female fish processors and vendors are analyzing their current traditional fish drying designs and are making suggestions based on their needs. With their contributions, we are

proposing gendered innovations and design for improved fish drying technologies and production space such as; creating drying facilities with women’s change rooms, children’s playground, recreation area, and a mini-market; creating an easy to operate fish drying oven with smoke control, thermal responsive skin, heat control at refill pocket, and increased production capacity. We are constantly learning more about the hazards women undergo in fish preservation and have gained knowledge on best practices in fish processing that will minimize drudgery, labour operations, and unsanitary handling that are often involved in the traditional system.



ID47 Project team members with some of the female fish farmers, processors and vendors in Akwa Ibom State, Nigeria, and OPAGESTE project partners and the Fishery Directors who took part in a research workshop.

*The team participated in GDS LabTwo | Session Two on prototyping:* We were able to attend the LabTwo workshop on prototyping where we discussed our future plans and current prototyping activities such as; creating and administering workshops with fish drying women as well as collaborating on architectural and engineering drawings for improved fish drying facilities and technologies. We are also planning to interact with self-help groups, freelance or individual women fish processors and vendors in the next phase of field work, to obtain more contributors and create awareness of the innovation for the grassroots women.



The PI, Dr. Okon, leads a focus group discussion with Nigerian female fish processors and vendors.

Based on inputs of the case study, we have worked on a maquette. We are currently planning for a working life-size prototype of the improved fish drying technology, which can be tested by the women fish vendors, working towards a proof of concept that will serve the project beyond the scope of the GDS project.



A group of women fish processors and vendors work on and respond to the research instrument.

*Dr. Uduakobong Aniebiat Okon (PI)  
Mrs. Otu Ebeten Bassey (Co-PI)*

All of the GDS Bulletins can be found here:

- [Issue One | January, 2021](#)
- [Issue Two | March, 2021](#)
- [Issue Three | May, 2021](#)
- [Issue Four | July, 2021](#)
- [Issue Five | November, 2021](#)

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**ID50** Designing mobile services for ageing women in Malaysia | Multimedia University (MMU)



*The project team have been re-thinking their research focus from a Gendered Design perspective as they move into Phase II:* In 2021, as we worked through Phase I of our research and in consultation with regional and program experts, we relooked at our Gendered Lens for the project and how we could better build an intersectional approach into our work on ‘gendered design.’ Data analysis conducted for Phase I using national micro data has solidified our initial proposal that gendered design ought to be viewed through the economic lens, as income and expenditure on technology impact technology use by females. We found that elderly female households have significantly lower telecommunications expenditure.

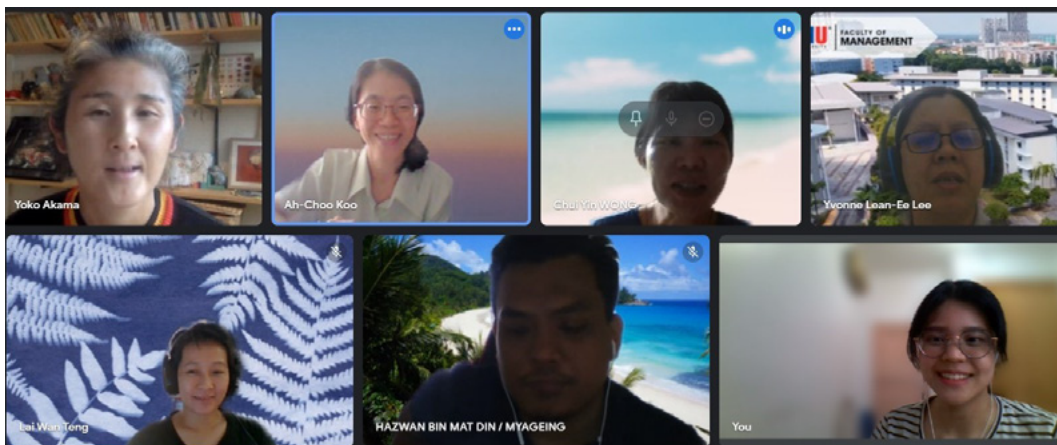
Moving forward, we will be focusing specifically on ageing women and their power relationships (e.g. access to information, mobile service) with mobile phones within the family. The intersectionality approach will be used as the theoretical foundation to build a broader perspective on how mobile users, especially the elderly, uses mobile services and applications. The perspectives and analysis can be viewed through variables such as ethnicity and culture, gender, age, social economic status, education level and exposure of using mobile and smart devices. Some controls of the variables will be imposed in Phase II, for example, the selection of participants of the study based on their region and family size. This is to ensure the research scope and scale are manageable within the time and resources allocated.

In Phase II, we will conduct case studies with elderly women of their experiences and behavioural patterns of using

mobile applications and services in their daily life, within one family context (min of 3 persons in a family). This will include observing individuals’ interactions with their family members in regard to the mobile apps and services usage (i.e. conversation, issues, learning, guiding). We have learnt a lot from other GDS projects in different regions during the initial online GDS meetings. Our participation in the research activities organized by Carleton University and the larger GDS program, especially the few rounds of research discussions, were able to provide the background for the research team to reflect and adapt in the forthcoming study.

The case study design for Phase II will be using the gendered inclusive design framework and intersectionality approaches, and will explore how variables of socio-economic status, gender, and culture / ethnicity impact the study. These research outcomes will be used to inform policy makers, including government at all levels and technology innovators and designers for greater impact in regard to societal development and gender, which aligned with the UN Sustainable Development Goal 5 (SDG5) to empower and achieve gender equality that is also an important agenda of development in Low-to-Middle-Income-Countries (LMIC).

*COVID-19 has made the project team rethink the methodology of their research:* In Malaysia, movement control orders have been lifted as COVID-19 statistics have shown a decline of daily cases from the peak in August to



Project team ID50 meeting with their Regional Expert, Dr. Yoko Akama where the focus was to help strengthen the theoretical aspect of the study for Phase II.

present. However, with the current still concerning daily count cases, the sentiment of families to receive visitors is still a main concern. The research team has deliberated that due to this reason, particularly on social distancing, the team would like to use the opportunity of conducting online research methodology to further develop this study. The team has some expertise on capturing media, processing media, and operating digital media skills on data collections, exploration and interpretation of research findings. This process of online research can also be reported as one contribution of research.

The research ethics application is currently on-going. The preparation of research instruments and discussions on how Phase II research will progress are to be shared among the team members. The change of Project Investigator (PI) has also created a small challenge to the project team. They are now facing their tight schedule with their existing administrative and teaching workload and other concurrent project(s) in the second half of the year.

*Initial results in Phase I submitted for publication and the team continue with exploring opportunities for disseminating the findings:* At the first phase of our research, we plan to produce a journal paper on Elderly and Gender studies on mobile that influence telecommunication policy in Malaysian context. We had submitted our Phase I Document Analysis using secondary

data from the Department of Statistic Malaysia (DOSM) to produce a journal paper on Elderly and Gender Studies with Telecommunication Policy in May 2021. However, we received editorial rejection, and we have revised the paper and submitted to 'Technology in Society', which is still pending editorial decision. We are also reworking the Systematic Research Review on Gender and Mobile Usage among Elderly in Malaysia to another journal. In June 2021, our Graduate Research Assistant successfully defended the proposal defense of her Master study on the current research study.

Phase II updates: The Miro board (below) shows some relations of theory and initial research framework guided by the research questions posited for Phase II. Some initial themes were stated in the board before the actual data collection stages, which is planned by the end of this year and the beginning of next year 2022. The good news on the extension of the GDS research program has added some confidence for our research team to conduct the study with proper plans. Our group discussion on Miro board on Phase II, we revised and finalised on the represented themes and theoretical details based on the research questions.

Dr. Koo Ah Choo (PI)  
 Dr. Chui Yin Wong (Co-PI, previously PI);  
 Dr. Yvonne Lee (MMU); Dr. Lai Wan Teng (USM);  
 and Hazwan Mat Din (UPM) (Co-PIs)



The project (ID50) team discussion on Miro board for Phase II, used to revise and finalize the represented themes and theoretical details based on their research questions.

ID88

## Developing new construction techniques based on the work of women in Brazil |

Universidade Federal de Alagoas (FAU/UFAL)



*The team of ID88 have been meeting with different communities to plan the designs that will be developed:*

Part of our project involves working with a quilombo called Santa Rosa dos Pretos. Quilombos were traditionally encampments of people in Brazil who had escaped their enslavers, and some of these villages have applied to be officially recognized as quilombos and be granted collective ownership of their land. Although we have not been able to meet in-person with the people of the quilombo Santa Rosa dos Pretos, we have been able to hold virtual meetings, and the community has approved the architecture project we want to develop. By now we are in the detailing phase, along with quantifications and budget planning.

We have been visiting the Serra da Misericórdia in the Complexo da Penha in Rio de Janeiro around once a month, in order to stay in touch with local initiatives there. We started a partnership with the Núcleo Ecologias, Epistemologias e Promoção Emancipatória da Saúde (NEEPES) from FIOCRUZ. The project is called 'Connections between agroecology, decent housing and care in the construction

of sustainable 'and healthy' urban territories in COVID-19', and aims to map the local territory resistance initiatives. We organized, together with the NEEPES, a virtual pre-workshop with the theme 'Decent housing'. This activity involved agents of housing social movements, university professors, dwellers and researchers.

Our collaboration with the fishing colony of Porto de Pedras (Alagoas) has been made difficult by the COVID-19 pandemic, as the region has been cut off and internet access is difficult for residents there. Thus, between March and June, the dialogues and mapping of constructive typologies related to the knowledge of women involved in fishing activities in Porto de Pedras were restricted to text messaging and teleconferences, and to investigations of ways of life and constructive technologies of riverside housing. Beco, the Model Office of Architecture and Urbanism at FAU-UFAL, has conducted the surveys and designed digital proposals for fishing support boxes and a cultural centre to benefit the local fishermen and women of Porto de Pedras. This project seeks to strengthen the



Improvements and small repairs to the local NGO at Serra da Misericórdia (Complexo da Penha, Rio de Janeiro)





Colony's fight for the preservation of fishing areas, which are constantly threatened by the tourist sector because of their beautiful beaches. The construction of the cultural center will strengthen the visibility and valorization of fishing activities, contributing to the fishing community's perpetuation and survival.

Follow [Beco.emau Instagram](#) account

*The team of ID88 have been disseminating their findings and making connections with other researchers:* We organized, along with some professors of the Núcleo Interdisciplinar para o Desenvolvimento Social (UFRJ) a 45 hours master's course called 'Technology, Labour and Care'. We discussed devalued technologies and techniques that have been made invisible and not seen as labour, and appropriated by those at the margins of the hegemonic system, and strategies of technological and design resistance. We also we held a debate/lecture for the release of the book 'Canteiros da Utopia' by architect Silke Kapp in June 2021, which is available to watch on the MOM (Morar de Outras Maneiras) YouTube Channel: <https://youtu.be/Vf-chmlqy-Q>.

*The team of ID88 have made all these advancements despite very difficult circumstances:* Brazil has been and continues to be very hard-hit by the COVID-19 pandemic, and access to vaccines remains limited. Some members of our team have contracted the disease, been caretakers for others that have, or lost loved ones. The communities we are working with have been particularly vulnerable in the pandemic situation, and many community members do not have reliable access to internet. Because of bureaucratic issues in Brazil, we only received our funding in August 2021, making working during this year and connecting with communities even more difficult.

*They are looking forward to the next steps in their research project:* Our goal is to start construction work at the quilombo Santa Rosa dos Pretos in early 2022, if possible. We are also planning a field visit to Porto de Pedras in order to continue dialogues on constructive knowledge and technologies with women involved in artisanal fishing there.

Professor Diana Helene Ramos (PI)  
Amanda Azevedo (Co-PI)

**ID73** Improving the design process for housing and public spaces based on women's experiences in Rwanda | University of Rwanda



*The team has met weekly to discuss the project progress and is moving into the data collection stage:* We wrote the terms of reference and concept note for field work and have moved to the data collection phase. We designed the questionnaire in Google Forms and the questions look to identify and explore gender issues in housing and the built environment. In collaboration with different stakeholders, the data collection is progressing smoothly. Some of the required equipment or materials to use in the data collection has not been purchased but we have used our own equipment to start the field work.

*The team participated in GDS LabTwo | Session One on the role of power in gender design:* Our team participated in GDS LabTwo | Session One in conversations on gender and power. We have prepared training that helps us discuss our project and improve gender design in our societies. Some team members attended other organized workshops as well to expand their knowledge.

*The team conducted their first fieldwork in the Northern Province, Musanze District, INES Ruhengeli:* Recently, we went to Musanze to conduct fieldwork. We ensured that respondents understood the purpose of the research and that they were given enough time to complete the questionnaire. A good number of students were surveyed randomly and INES staff, together with some district officers. Data collection sessions are still going on at the different institutions sampled as the population of study.

*The team's next steps moving forward are:* We continue to follow up on our internal procurement processes to purchase equipment. We have given ourselves a deadline to finish with data collection within November, including Huye, Bugesera and Kigali City. The data sorting and analysis will follow. A report will be written in order to disseminate our findings. We are also planning for a validation workshop with our stakeholders before the publication of our results.



*Left to right: Mrs Marie Antoinette Uwajambo; Dr. Marie Chantal Cyulinyana (PI); awaiting info; Roselyne Ishimwe (Co-PI); and Mrs Delphine Mukanaeza, outside the INES- Ruhengeli where the first round of fieldwork took place.*

*Dr. Marie Chantal Cyulinyana (PI)  
Mrs. Roselyne Ishimwe (Co-PI)*

**ID74** Improving transportation systems for women in Rwanda | University of Rwanda



*The team designed three questionnaires and conducted training with enumerators:* Our team developed the online tool for our three questionnaires: Public transport users (in English and in Kinyarwanda); and Public transport for policy makers. We also developed a training manual for enumerators, and conducted a training session on how they will collect data. During training of the enumerators, including the research team, we were briefed on respecting local norms during data collection. We were also informed that respecting the privacy of participants, especially women, who may not want to talk in public for instance, should be respected.

*The team's field research was partly delayed due to COVID-19 restrictions:* We defined the sample of participants for the pilot data collection and final data collection. Unfortunately, due to COVID-19 restrictions, employees had to work from home and we could not conduct data collection as we had initially planned. We plan to contact the public policy makers by phone and we will give them the online questionnaire to complete. Collecting data from the users will be challenging as we still don't know when the COVID-19 situation will improve and allow for free movements for all within Kigali City.



The research team of ID74 developing the training manual for the enumerators.

*The team managed to conduct some data collection in the field:* We were delayed conducting our data collection due to COVID-19 restrictions, but we finally managed to collect some data from public transport users in Kinyarwanda. For the English questionnaire of public transport users, we conducted data collection in a form of interview where we were asking participants the questions from the questionnaire. We conducted data collection at the bus stations, bus stops, and in the bus. However, we are still facing challenges for the two online English questionnaires for public transport users and public transport policy makers in Kigali City. We have distributed the online questionnaires and we hope to get feedback from participants by the end of November.



Training the enumerators.



Enumerators in the field conducting data collection at the bus stop and bus station.

Dr. Didacienne Mukanyiligira (PI)  
Mrs. Marie Grace Umumararungu (Co-PI)

ID53

**A case study of ergonomic design considerations of low-income, menopausal women in Brazil | Universidade Estadual Paulista (UNESP)**



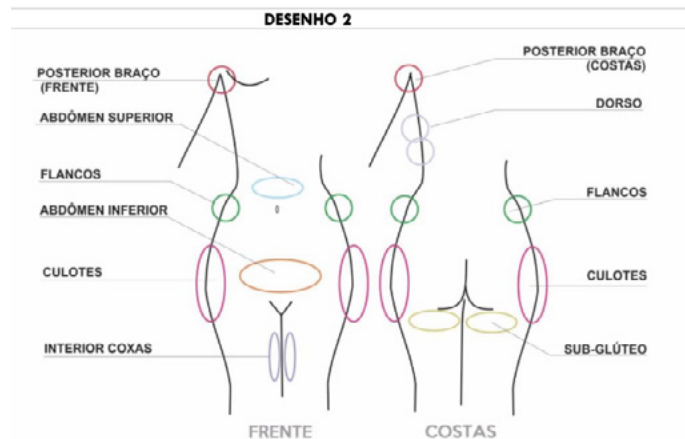
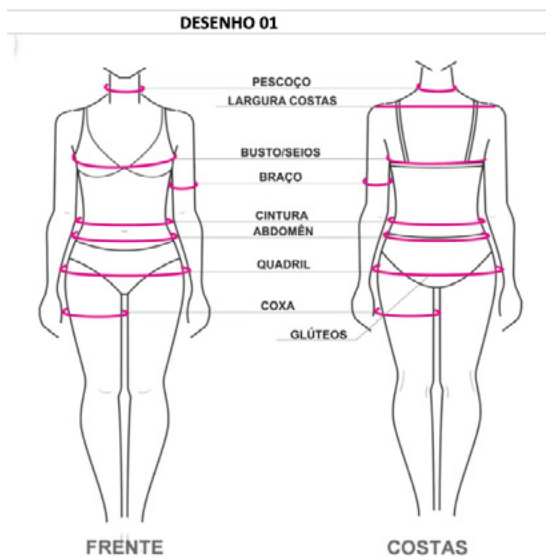
*The team of ID53 have adapted their approach in response to challenges to their research:* Because of bureaucratic issues between Brazil and Canada, our research team did not receive the first payment until May 2021, which compromised the schedule previously delineated for the investigation. We have also faced enormous obstacles due to COVID-19, mainly because the residential area (Bauru – SP) of the target participants (low-income middle-aged women) of the investigation have been particularly hard-hit by the pandemic. The quarantine and the prominent city lockdown naturally made getting in touch with participants impossible.

The lack of technological access of the participants along with the unfamiliarity with such technology made the online application of the protocol unfeasible. Considering this scenario, and after some enriching discussions with GDS collaborators, we decided to change the approach: both regarding reducing the number of participants and about the research methodological bias. In summary, we developed an interviewing questionnaire with open questions, aiming at qualitative data (instead of predominantly quantitative) that will contribute to exploring the subjective and emotional perspective of the participants about fashion, gender, society, and stereotypes.

*The team of ID53 has felt validated and inspired by other GDS researchers:* The knowledge sharing in the workshops and lectures was very enriching. Learning about the work done by another researcher colleague reaffirmed our belief that 'design' is essential to building societies that seek social and gender equity. We were inspired to explore different methods and possible lines of questioning (mainly regarding quantitative and qualitative data) after getting to know the other researchers' methodological approaches.

In our project, we are interested in the perception of middle-aged and low-income women of Brazil about their body transformation during aging and how fashion is emotionally perceived and used throughout this stage of life.

*Dra. Érica das Neves (PI)  
Ma. Leticia Marteli; Dr. Luis Carlos Paschoarelli;  
and Dr. Fausto Orsi Medola (Co-PIs)*



The two images are used as part of the survey ID53 is conducting with middle-aged low-income women in Brazil about perceptions of their body.

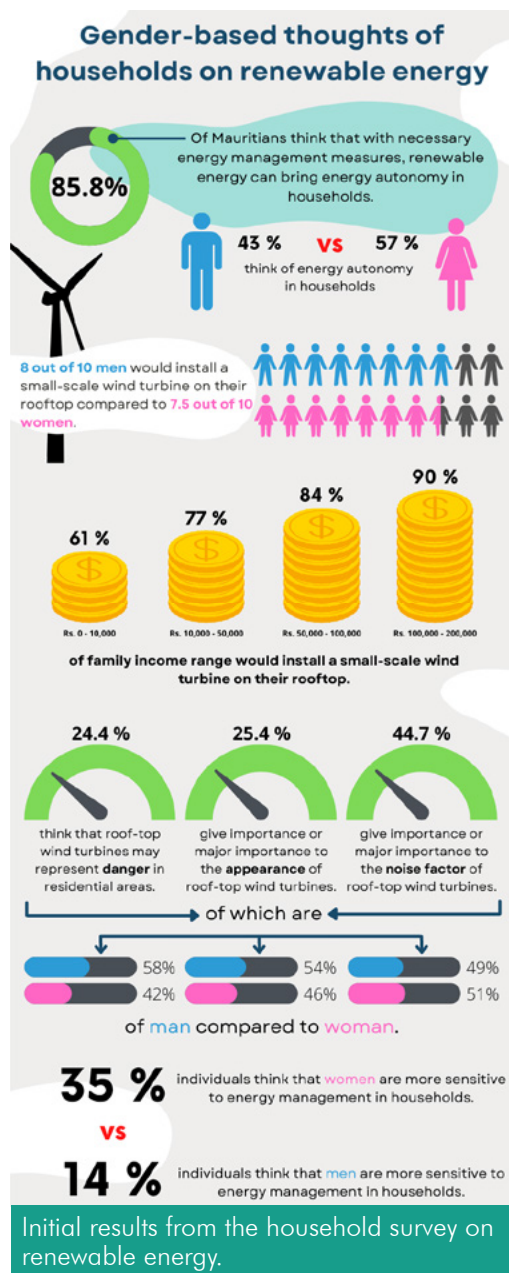
**ID71** Developing small wind turbines with local women for domestic use in Mauritius | University of Mauritius



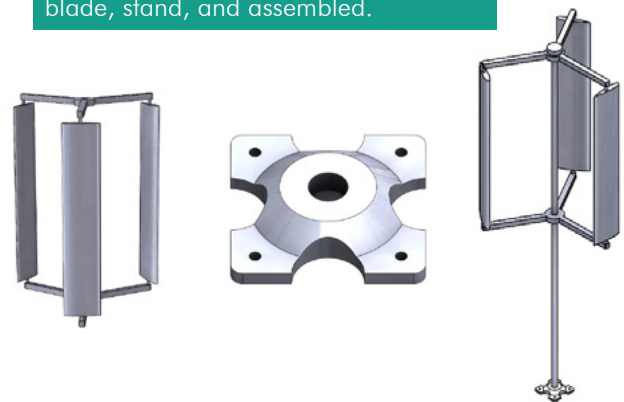
*COVID-19 has delayed research activities in the field but online work was able to continue:* The second lockdown of the country restricted us from outdoor activities, however with the purchase of laptops and network availability, we managed to work online. We were able to hold an online workshop based on Gendered Design in August, 2021 and began preparing a survey for households at the national level to ask fundamental questions about the meaning and impact of our current endeavour. Specific surveys targeting women groups, selected households, and energy sector stakeholders are also in process. So far, 275 responses

have been recorded and we are expecting more than 300 responses. A literature review on design with integration of gender issues is ongoing. We are in a learning process on gendered design but with the planned workshops as well as surveys, there is growing engagement of stakeholders at all levels.

*The team participated in GDS LabTwo | Session Two on prototyping and have been working on their prototype development:* Our team attended the GDS workshop on prototyping, where we discussed our prototyping activities thus far such as exploring ANSYS Fluent software and Q-Blade (open-source software that facilitates designing of wind turbines), the physical model, and the surveys. Additionally, we are planning to conduct, based on the above surveys, the identification of engineering design criteria and we hope to develop 3D models and prototypes of the wind-turbine as well. The prototype will focus on aspects of gendered design for a small wind-turbine for domestic use. The prototype will consist of a system model that will be tested and validated using numerical techniques. Subsequently, replication and up-scaling should be rendered possible with expected positive economic, and particular social and ecological impacts in the context of small island developing economies like Mauritius.



Left to right: Vertical axis wind turbine blade, stand, and assembled.



Dr. M. Khalil Elahee (PI)  
Dr. Abdel Khoodaruth (Co-PI)

**ID40** Assessing the impact of solar panels to improve energy access for women in rural Ghana | University of Energy & Natural Resources



*During March to June, the team began analyzing the qualitative data collected from the field through surveys:*

Our team collected data through surveys from males and females, which revealed the gaps that exist in electricity access and use in disadvantaged communities. We are interested in supporting renewable energy usage with a focus on income generation and gender empowerment.

We are planning to engage more women in a focus group discussion to understand and validate some specific survey responses. The main development in our research is that the women in these communities do not recognize how electricity access can improve their livelihoods because they have not been exposed or become comfortable in their present condition. In contrast, several studies have established a direct relationship between access to electricity and the social well-being of women, which we hope to encourage.

*The team's next steps moving forward are:* As well as the further focus group discussions, we plan on engaging stakeholders to deliberate on the research findings and seek desirable solutions to the problem.

*Dr. Samuel Gyamfi (PI)  
Dr. Danielle Sedegah and  
Dr. Eric Ofofu Antwi (Co-PIs)*



Boat ride to an island for fieldwork.



Enumerator from the project team engaging with a female respondent.



Meeting with community members at Atafiam.

# A CLOSER LOOK

In this edition of the Bulletin, Chiara Del Gaudio provides an overview of a research project she has been exploring with one of her students looking at design choices and gender.

'Exploring and undoing unaware gender violence by design' is a research project catalyzed by the activities and exchange made possible by the GDS program. I, the PI, was (and still am) interested in understanding how to promote awareness among design students on the implications of design choices and processes on gender identity and related issues. In addition to this, I wanted to explore also how design students would redesign their design processes for being more gender-inclusive and prevent unwanted dynamics of oppression.

Therefore, in May 2021, I started this project together with Amélie Houle, a current 4th year student in the Bachelor Degree in Industrial Design of the School of Industrial Design at Carleton University.

After a guided exploration of some gender issues inherent to the design and the mechanism behind it, Amélie has been engaged in the process of designing, from the perspective of a design student and together with me, a process for promoting this awareness and supporting students in rethinking their way of designing.

Amélie is designing a process (shown here) that will be soon piloted with some students from the school in the form of a workshop. The design stage in which they are in is the one of exploration of different possibilities for materialization and user interaction.

Regarding the whole experience, Amélie says: "When I first heard of this project, I knew I wanted to be a part of it because, as someone who was assigned female at birth and conditioned to be a woman, I have seen and experienced the consequences of gendered design first-hand. This project has been an eye-opening experience for me. It's provided me with the

opportunity to apply what I've learned about gendered experiences to the development of a workshop that guides students through their design process. This is done to help them understand their biases and how that affects the perpetuation of harmful gender-based stereotypes through their designs. I hope the outcome of this project will be as impactful for other students as the development of it has been for me."

## Overview of the 4 staged process design.

**01 Probe & Assess**

**GOAL**  
To try our gender biases experienced as consumed/practiced throughout individual design processes.

**OVERVIEW**  
Based on their current assumptions, biases and perspectives, participants will assess the characteristics of a given persona and match the persona with an object that they feel would suit the persona best.

**ACTIVITY**  
Participants are provided with cards featuring multiple personas (their jobs, daily routines, and things they like to do).  
Participants are asked to select the card for the persona they would like to design an artefact for.  
**If working with a partner or group**, select one persona card for the group.  
After this, participants are asked to re-visit the persona card one section. The cards are then taken away and participants are required to rely on their memory and perceptions of the persona for the subsequent steps.  
Participants are then asked to design an artefact they believe the chosen persona would use or enjoy based off of the description provided. For example, this could be something they would use during a leisure activity, an article of clothing they would wear, an item they might replace on a tool they might use in their day-to-day life, etc.  
The design portion of this activity is to be done **quietly** (can be a sketch on back, prototyped and **individually** (even if working with a group), without discussion or input from others).

**02 Assumptions & Consequences**

**GOAL**  
To identify personal biases and reflect on both the assumptions made throughout the design process and the resulting implications and consequences on the user.

**OVERVIEW**  
Participants will reflect on their assumptions from the previous step, identify their bias and explore their consequences.

**ACTIVITY**  
Participants are asked to analyse the characteristics of the persona they chose by making a list of their persona's characteristics. This can be a list of characteristics they remembered and made assumptions about.  
Participants are provided with an activity sheet (see figure 1) and are then asked to plot their analysis of the characteristics of the persona on their chosen graphic. The activity sheet will provide them with multiple visualization graphics (see figure 2) as well as a blank space for them to make their own if they want. They're asked to make a graphic according to their perception of the gender expressed in the descriptions (all are valid—there's no right or wrong answer here).  
**If working with a partner or group**, participants match designs from the previous step and analyse the artefact designed for a partner. Participants are then asked to plot their analysis of the characteristics of their partner's artefact on a graphic according to their perception of the gender expressed through the artefact.  
Finally, participants are asked to reflect on and discuss the rationale behind their decisions.

**03 Drag Object**

**GOAL**  
To recognize the performative nature of gender and understand how design decisions affect the outcome of the design process.

**OVERVIEW**  
Participants will apply their analysis from Step 2 to redesign the artefact made in Step 1 using the concept of drag-objects.

**ACTIVITY**  
Participants are asked to redesign their artefact from Step 1, in drag.  
Explore the concept of drag: what is it? Focus on the exaggerated and performative nature of it. Aim to change stereotypes in the artefact, that is, the identified assumption embedded in it.  
To redesign the artefact, participants must only change **one** characteristic of the artefact while maintaining its intended purpose and integrity (after it is to be used). This can be a change in colour, form, material, function, etc. They will be able to reference their persona card again.  
In doing this, consider how this artefact might change if it was made for someone who identifies with the opposite side, or a different area of the gender spectrum. See **Reflection Questions for prompts**. To add in visualizing this concept, participants can plot this new drag object on the visual representing its gender expression from Step 2.  
Remember: this is an exploratory activity where you're not designing "better" good and bad design, but to explore the gendering potential of design elements.  
**If working with a partner or group**, participants have the opportunity to view an object that could be showcased at an exhibition to provide reflections with others. If this is explored, participants are encouraged to go about their redesign with this in mind: how can this object provide a reflection in an outside view? What design and re-design are going to be showcased...  
**REFLECT**  
\*See **Reflection Questions**\*  
Participants are encouraged to use visual aids and maps to reflect on these questions.

**04 Design Differently**

**GOAL**  
To self-reflect on identified biases, to analyse one's own design process and initiate its change.

**OVERVIEW**  
Participants will review their personal design process to understand how and where gender biases affect their design process. They will then envision how they could improve their design practice and process.

**ACTIVITY**  
Participants are invited to reflect on the previous activities and on the design process they usually perform:  
1. How do you design? Reflect on your design process: you can think of it as the one from this activity and/or as the one from other projects you have worked on. List your steps.  
2. Where do you gender throughout the process (note that you know now, the question is whether and where this is done consciously/ intentionally or not)? Why?  
3. Reflect on what you understood in Step 3 regarding how artefacts influence gender performance, and how to share it: how would you apply this understanding to your design process to minimize the effects of your personal biases and the determination of gendered possibilities/choices?  
Finally, participants are provided with a blank card and asked to adapt their reflection questions into a list of 3-5 highly specific, questions and practices to be used in their own future design processes.  
(Note to step 3: Participants are also invited to create their own questions to reflect on the artefacts created. Consider providing reflections that would get viewers to question their own perceptions. This is an area where many people experience discomfort—this discomfort could be explored further in order to prove a point (explain this more).  
**If working with a partner or group**\*  
(GDS/GSDCI) participants are encouraged to compare/analyze their redesigned artefacts, along with the questions from above, to showcase an exhibition.  
**\*INTEGRATE** This could also potentially be achieved if working alone via an online platform (for example, a website, social media with hashtags, etc.).  
**CONCLUSION STATEMENT**  
Once the activity is complete, conclude with a statement on what you understood throughout the process and on its relevance, if so. Then, think if and how the process should and could be applied to racial bias, socioeconomic bias, ability bias, etc. For example, when the participants showed the persona in Step 1, which one were you/you/they all most affected?  
Question (see 20-25 min Exhibition - ?

## Q&A WITH

In this issue, we talk to **Dr. Dominique Marshall**, Professor in the Department of History at Carleton University and Co-PI for the GDS Program.

### 1. You're one of the Co-PIs, along with Bjarki Hallgrímsson, on the GDS Program, how did you get involved?

Five years before the program on Gendered Design in STEAM started, the Carleton University Disability Research Group (CUDRG) had already shown me how fruitful partnerships between historians and experts in STEM could be. What unites the Medical Engineering, Social Work and History members of this group is an interest for tacit knowledge and forgotten histories of technologies, pieced together by users with disability, and transformed by them. The theme of disability, like most of the topics I have studied so far, concerns the past of families, their relationships with broader institutions, and the ways by which the age and the sex of household members are understood in different cultures and classes. The work of the CUDRG, initially concerned with Canadian cases, was expanding towards transnational stories when it attracted the attention of research officers at Carleton and at the International Development Research Centre (IDRC), who were looking for a team to support exploratory projects on gendered design in the Global South.

I was delighted by their suggestion of working with Bjarki Hallgrímsson and his colleagues; I had heard him speak a few months before about the wheelchairs he had prototyped in Uganda with fellow designers and participating rural communities, in the spirit of what members of his profession call 'Design for the Millions'. For both of us, the promise of resources to hire a professional project coordinator, as well as the opportunity to include graduate students and interested Faculty at Carleton, made the prospect of this large endeavour compelling, and less intimidating. I brought several historians with me: the initial details of the program were ironed out thanks to a post-doctoral fellowship in History. Later, we added two emerging historians to the team: one MA student with experience in oral and spatial histories of urban transportation, and one PhD student interested in the use of data science in public libraries and in graphic presentations of history.



**Dominique Marshall, Professor of History and GDS Co-PI**

### 2. You have a long career as a historian, what are your highlights and most proud achievements?

I helped create the Canadian Network on Humanitarian History (CNHH) a decade ago, which has provided an occasion to try several historical ideas and ways of working. The CNHH includes archivists, veterans of aid and development, graduate students, and emerging scholars from the country and abroad. We have harboured initiatives in many directions: the rescue of personal and institutional archives; the collection of oral histories; the creation of collaborative projects with NGOs celebrating anniversaries, organizing their archives, or researching their past; the building of virtual and traveling exhibits; the organization of workshops; transnational exchanges between scholars and students.

For many of us in this field, the past of humanitarian encounters can only be fully studied by looking beyond the gloss of annual reports, the officialdom of state archives, and the immediacy of media accounts. Documents and testimonies about the daily experiences of aid, and about the various ideas at stake, can only see the light of day when historians encourage and sustain trusted relationships with humanitarian and development workers who, in turn, have long tried to secure the trust of their own networks of solidarity and support. I have attempted to create or find such documents for my own research in the history of Oxfam Canada, and the history of the Conference on the African Child organised in 1931 by the



Save the Children International Union. This is very close to the method designers of GDS call “participatory design”. These are also the principles that preside over the work of the much larger Carleton’s Local Engagement Research Refugee Network (LERRN), of which I have been a member for the last three years, as one of two historians. I discover regularly from colleagues of this group how more equitable investigations involving Northern and Southern researchers and communities can be conducted and supported for the long haul, and how lessons from the field can be brought to policy makers in constructive ways.

*“...more attention to hidden issues of gender could change understandings of the history of international relations...”*

I am also glad when I come across occasions to write historical pieces that can be immediately useful, as colleagues of the United Kingdom do so well around the group 'History and Policy'. This ambition underlays my last three writing projects. I was responsible for the historical chapter of a comprehensive Canadian textbook for studies in philanthropy and nonprofit management, for instance. It helps practitioners identify historical trends amongst the multitude of facts and dilemmas they face when they have to make small and big decisions. Besides, I wrote the conclusion and summary of a very nice collection of essays on the history of women in Canadian foreign relations, in which I tried to ponder, from a dozen of case studies, how more attention to hidden issues of gender could change understandings of the history of international relations: the study of the role of Southern populations, the production of genuinely transnational collaborations, the abandonment of polarized and cyclical postures between virtue and fatalism.

Finally, I worked with Communication Officers of four NGOs with whom I had previously collaborated on history projects, to prepare an article on how their own organizations’ longstanding ethical traditions in humanitarian photography could help humanitarians, and many others, face current challenges of the digital communications.

### 3. You’re a Historian – where is the link with Gender, Design and STEAM?

Last year, when asked about ways of facing the rapid and often worrisome changes in the development of artificial intelligence, Dr. Isabel Pederson, a specialist of Digital Life, Media, and Culture at Ontario Tech University, told the audience of a webinar organized by the Federation for the Humanities and Social Sciences (FHSS) to study the last thirty years. This is where my discipline fits, and I owe to historian of 17th and 18th century European science Stéphane Van Damme a good summary of the promises of the field, in a chapter published a decade ago: historians of sciences and technologies, he writes, help restore the former strangeness of habits of thought that have come to seem normal; they remind people of the debates, the institutions, the types of communications, the links to local material cultures, practices and adaptations, the varied intermediary figures, and the many other circumstances required for one technology, or one scientific discovery, to become valid, known or rejected. Aware of these many dimensions of knowledge, historians, like many social scientists and artists, are good companions to practitioners of STEM who are mindful of the cultural nature of their work, and of the potential biases of their routines. This the role of the 'A' in the acronym 'STEAM', which has come to define the program.

Historians are also trained to think about fruitful ways of recording the past, up to what they call ‘the history of the present time’; in this way, they can help document and analyse STEM colleagues’ ways of working. Part of the GDS project is informed by what historians call life histories, oral interviews centered on long and wide storytelling, from each project. The work of “public historians” is also fitting for research in Gender, Design and STEAM, very much like the work of ‘public scientists’. It speaks of knowledge that belongs to everyone. Early on, people interested by this project gathered on the possibility of building a digital exhibit to share results, attract contributions, and provoke exchanges. Public historians experiment regularly with the

*“...historians, like many social scientists and artists, are good companions to practitioners of STEM who are mindful of the cultural nature of their work, and of the potential biases of their routines. This the role of the 'A' in the acronym 'STEAM', which has come to define the program.”*

thoughtful presentation of documents, and with ways of making such materials engaging to different audiences. Again, this is very close to the exercises of 'visualization' familiar to designers. Working across disciplines like we do weekly in GDS allows us to discover commonalities between fields, as much as it encourages transfers of unknown knowledge and methods from one discipline to the next, an aspect of 'interdisciplinarity' which is better known.

#### 4. What have you learnt from your involvement in the GDS Program and what are you looking forward to?

This fall term at Carleton I'll teach a course on Canadian histories of science and technologies based on what this project has allowed me to understand since its beginning. In addition to what I have already presented here, I can say that watching the twenty research teams at work also offers a constant opportunity to think comparatively about the place of Indigenous and Traditional Knowledge (ITK), including in Canada. Collaborating with designers from here and abroad has given me words to understand several activities I valued implicitly before. What that they call 'iterative prototyping' offers words to think about the many steps of my teaching and research habits, for instance, by slowing them down, naming them, and discussing them. This is not unlike the way by which long life histories help pace testimonies and uncover less well-known phenomena. Gendered topics, such as the lives of

*"Working across disciplines like we do weekly in GDS allows us to discover commonalities between fields...it encourages transfers of unknown knowledge and methods from one discipline to the next, an aspect of 'interdisciplinarity'..."*

people in their homes and amongst their families, often exist at that speed.

In conclusion, a little more than halfway through, this program has already offered many surprises. It has been wonderful to see how, left to their own project teams, ideas about gender and what designers call 'making' find their way in different contexts, and the extraordinary variety of directions the twenty initiatives have taken with these notions in their luggage. The researchers and communities involved are informed by their own, old, and active ideas of what happens in their own community and cultures. In many ways, like it has done for me, the program has offered many researchers opportunities to make these connections more explicit. The decentralized format we were given as an initial challenge, as well as the strange way by which the pandemic restrained our physical movements and increased our virtual communications, have, I think, facilitated work across places on a more equal footing.

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